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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,067	07/11/2003	Jifa Hao	90065.000701/17732.6357.0	4314
44331 7590 11/16/2007 HISCOCK & BARCLAY, LLP 2000 HSBC PLAZA 100 Chestnut Street ROCHESTER, NY 14604-2404			EXAMINER ROSE, KIESHA L	
			ART UNIT 2822	PAPER NUMBER
			MAIL DATE 11/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/618,067

Applicant(s)

HAO ET AL.

Examiner

Kiesha L. Rose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/30/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14, 20, 21 and 23-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14, 20, 21 and 23-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the amendment filed 8/30/07.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14,20,21 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hshieh (U.S. Patent 6,051,468) in view of Itho (U.S. Patent 5,034,341).

In re claim 14, Hshieh discloses a power semiconductor device (Fig. 6) that comprises a semiconductor substrate (44), a source layer (58) at one surface of the substrate and comprising a high concentration of a dopant of first polarity (N), a single drain (64) on the other surface of the substrate, a well layer (60) beneath the source layer doped with a second polarity (P) opposite the first polarity, a region (62) lightly doped with the one polarity (N) positioned above drain region and below the well layer, a plurality of trenches (48) penetrating the source line and terminating in said region lightly doped with said one polarity, trenches substantially filled with a conductive material (52), a highly conductive layer (118) on the surface of the source layer comprising a material reacted from a metal and the substrate, an insulating layer (66)

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on the highly conductive layer and on the conductive material in the trenches, vias formed in the insulating layer and extending to the highly conductive layer on the source line and conductive material (68) filling the vias for contacting the highly conductive layer. Hshieh discloses all the limitations except the highly conductive path extending from the first trench to the second trench. Whereas Itoh discloses a semiconductor device (Fig. 4) that contains a first and second trench (79) and a highly conductive layer (73) that extends from one trench to another trench. The highly conductive layer extends across the trenches to form a bitline for the device. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Hshieh by incorporating the highly conductive layer to extend across the trenches to form a bitline for the device as taught by Itoh.

In re claim 20, the trenches are filled with polysilicon (Col. 5, lines 14-17) and the top surface of the polysilicon is covered with a highly conductive material (120) reacted from a metal and the substrate.

In re claim 21, the highly conductive layer is a silicide. (Col. 10, lines 1-3)

In re claim 23, the silicide is reacted from titanium. (Col. 10, lines 1-3)

In re claim 24, the insulating material is BPSG or PSG. (Col. 7, lines 24-26)

In re claim 25, the trenches are lined with a trench wall insulating material (54) and the insulating material on the highly conductive layer contacts the ends of the trench wall insulating layer lining the walls of the trench. (Fig. 6)

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In re claim 26, the vias terminated on the surface of the highly conductive layer for making electrical connection between the highly conductive source layer and the conductive material filling the vias. (Fig. 6)

Response to Arguments

Applicant's arguments with respect to claims 14, 21 and 23-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 571-272-1844.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KLR


Kiesha L. Rose
Primary Examiner
11/13/07